Pyramidal neurons are generated from oligodendroglial progenitor cells in adult piriform cortex.

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Public Summary:
Prior studies have shown that oligodendroglial progenitor cells (OPCs) can give rise to neurons in vitro and in perinatal cerebral cortex in vivo. We now report that OPCs in adult murine piriform cortex express low levels of doublecortin (DCX), a marker for migratory and immature neurons. Additionally, these OPCs express Sox2, a neural stem cell marker, and Pax6, a transcription factor characteristic of progenitors for cortical glutamatergic neurons. Genetic fate-mapping by means of an inducible Cre-LoxP recombination system proved that these OPCs differentiate into pyramidal glutamatergic neurons in piriform cortex. Several lines of evidence indicated that these newly formed neurons became functionally integrated into the cortical neuronal network. Our data suggest that NG2+/PDGFRa+ Plp promoter expressing progenitors generate pyramidal glutamatergic neurons within normal adult piriform cortex.

Scientific Abstract:
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